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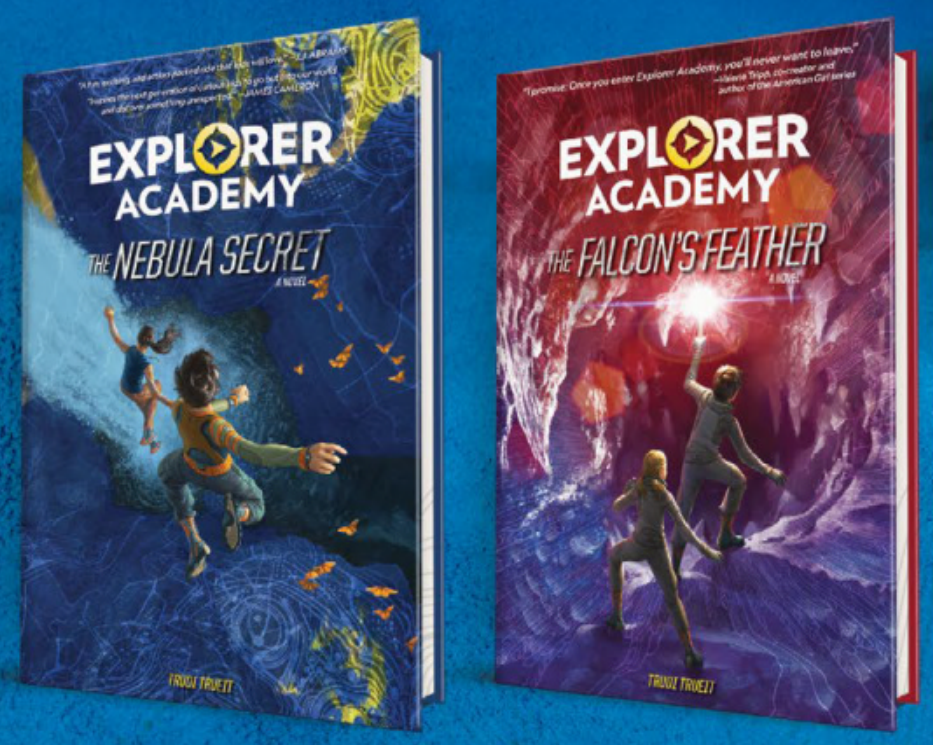

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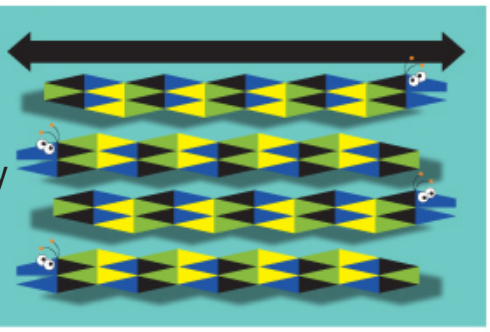

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weird but true!

Check out these outrageous facts.

BY MARILYN TERRELL

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I'M FEELING THE BEAK–ER, BEAT.

Some **parrots dance** when they hear **pop music.**

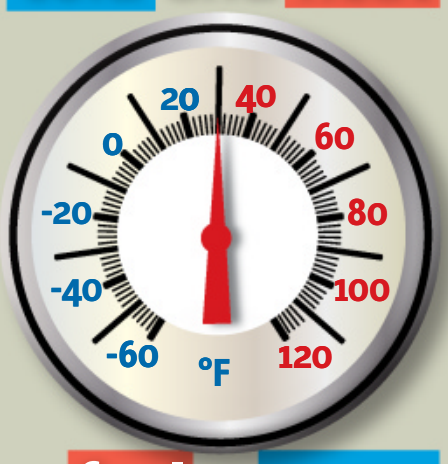
Your **"funny bone"** is actually a nerve, not a **bone.**

A woman crossed the **Niagara Falls** gorge walking on a **tightrope** wearing **baskets** on her feet.

People **compete** to make the **ugliest face** at England's **World Gurning Contest.**

It would take a stack of **2,220 cupcakes** to reach the top of the **Washington Monument.**

Extreme **cold** and **heat**



can **feel** the **same.**

Winds on Saturn can gust up to **1,118 miles** an hour—that's **twice the speed** of a **passenger jet.**

MARTIN HARVEY / KIMBALL STOCK (PARROT); JONATHAN HALLING / NG STAFF (NERVE); BETTMANN / CORBIS / GETTY IMAGES (TIGHTROPE WALKER); BURKE / TRIOLO / BRAND X PICTURES / JUPITERIMAGES (GOLD FRAME); IMAGE DIGITALLY COMPOSED; EXACTOSTOCK / SUPERSTOCK (CUPCAKES); GRAHAM TROTT / REX USA / SHUTTERSTOCK (GURNING); IAN COOK / IMAGE SOURCE / SUPERSTOCK (ROAD SIGN); JULIE DENGEL / NG STAFF (THERMOMETER)

GUINNESS WORLD RECORDS

BY ANGELA MODANY

BIG CHOCOLATE

Get out your toothbrush. The world's largest chocolate bar weighs more than 12,770 pounds, nearly as much as about 132,000 average candy bars. Created by pouring buckets of the melted mixture into a 13-foot-by-13-foot mold, the chocolate wasn't just a tasty treat. Pieces were chipped off and sold for charity. Another treat for the volunteers was that they went home smelling like chocolate!

LOOOOOOOOONG NOSE

This guy definitely *nose* he's special. Mehmet Ozyurek of Turkey has a 3.46-inch sniffer, the longest on record. Measured from the bridge to the tip, the schnoz is longer than a toothpick. Wonder if he can smell that dinner is ready before anyone else?

RACING SHEEP

Lamborghini the sheep is always ahead of the herd. He's won 165 out of 179 sheep races, the most ever. A jockey—a plush toy pig named Del Trotter—"rides" Lamborghini while the animal sprints to the finish line for his sheep pellet treats. Lamborghini *can* get distracted. Once he lost a race after stopping to nibble on a farmer's boots.

DAVID JONES / PA WIRE / AP PHOTO (CHOCOLATE); PAUL MICHAEL HUGHES / GUINNESS WORLD RECORDS (OZYUREK, LAMBORGHINI); INFORMATION PROVIDED BY © 2019 GUINNESS WORLD RECORDS LIMITED.

WILD VACATION

BY JOHNNA RIZZO

Airplane Hotel

HOTEL COSTA VERDE 727 FUSELAGE HOME

WHERE Manuel Antonio, Costa Rica
HOW MUCH $260 to $790 a night
WHY IT'S COOL Ever fallen asleep on a plane? Not like this you haven't! The 727 Fuselage Home is a real Boeing 727 jet that overlooks the Pacific Ocean 50 feet below. Separate from the main 70-room hotel, this special suite includes a cockpit sitting area and real airplane windows in your bedroom. From the deck perched on the plane's right wing, you might encounter howler monkeys swinging from trees, as well as toucans, sloths, and iguanas. Off the left wing you can watch the ocean, which you can access from a spiral staircase leading down to the beach. This hotel really has earned its wings.

COOL THINGS ABOUT COSTA RICA

Costa Rican calico butterflies are called "crackers" because of the crunching sound they make.

Traditional Costa Rican ice cream comes in flavors like peanut and sour cream.

Costa Ricans call themselves "Ticos."

Until recently, most addresses in Costa Rica used landmarks ("200 feet from the school") instead of numbers or street names.

THINGS TO DO IN COSTA RICA

Grab your swimming suit and go windsurfing on Lake Arenal, Costa Rica's largest lake.

Zip-line from treetop to treetop in Monteverde Cloud Forest Reserve.

Take a boat to see crocodiles, boa constrictors, and caymans among the mangroves of Damas Island.

Hop over to Monteverde Frog Pond to see more than 25 species of frogs and toads. They're especially jumpy and noisy at night.

VINCENT COSTELLO (ALL)

Bet You Didn't Know!

6 money facts you can bank on

BY ERIN WHITMER

1 The most **EXPENSIVE ITEM** ever sold on **eBAY** was a **168-MILLION-DOLLAR YACHT.**

2 A line of **84,702 PENNIES** would stretch for a mile.

3 The average **10-YEAR-OLD** earns about **$8.10** a week from **ALLOWANCE** and small jobs.

4 A standard **MONOPOLY** game contains **$20,580** in **FAKE MONEY.**

5 The **CLOCK** on the hundred **DOLLAR BILL** says **10:30.**

6 A **DOLLAR BILL** can be folded back and forth in the same spot **4,000 TIMES** before it tears.

RADZH DZHABBAROV / DREAMSTIME

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1 LIGHT METER

The slit-like pupils in **domestic cats'** eyes provide a distinct look, but they also have a purpose. Cats are active both day and night, and their eyes can adjust to all light settings. Their pupils are round when letting in lots of light and become slits to let in less.

Peculiar Peepers

HERE'S LOOKING AT YOU! SEEING IS BELIEVING WITH THESE WILD AND WEIRD ANIMAL EYES.

2 KEEP AN EYE OUT

Not only do **goats** like this ibex have horizontal, rectangular-shaped pupils, they can rotate their peepers 50 degrees—10 times more than humans can—to keep those slits parallel with the ground. This helps them spot predators while they're grazing.

BRENDA CARSON / SHUTTERSTOCK (1); JEAN-JACQUESALCALAY / MINDEN PICTURES (2); CHANTELLE BOSCH / SHUTTERSTOCK (3); ROB HAINER / SHUTTERSTOCK (4); KAMONRAT / SHUTTERSTOCK (5); PHOTO BARMALEY / SHUTTERSTOCK (6); BRIAN J. SKERRY / NATIONAL GEOGRAPHIC IMAGE COLLECTION (7); TOLLKUHN / ULLSTEINBILD / GETTY IMAGES (8)

CHECK OUT THE BOOK!

BY JULIE BEER AND MICHELLE HARRIS

3 ALL-SEEING EYE

Don't try to sneak up on a **chameleon:** This remarkable reptile has eyes on the back of its head! Well, practically. A chameleon can independently rotate and focus each eye, giving it almost 360-degree vision. So it can look at two different things at the same time!

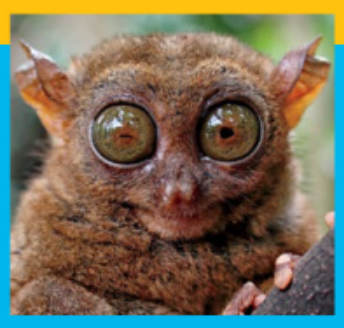
4 BUG-EYED

Most of a **dragonfly's** head is made up of its eyes. Those prominent peepers allow it to see nearly everything around it except what's happening directly in the rear. And if that's not enough, they can tell colors apart better than humans can.

5 WHO'S SEEN MY SHADES?

Don't ever challenge a **gecko** to a staring contest: They'll win every time. These lizards can't blink because they don't have eyelids. Most have big bulgy eyes with vertical pupils, like some snakes. Because they can't close their eyes when it's bright outside, geckos' pupils shrink to narrow slits to protect their eyes from sunrays.

6 WHAT BIG EYES YOU HAVE

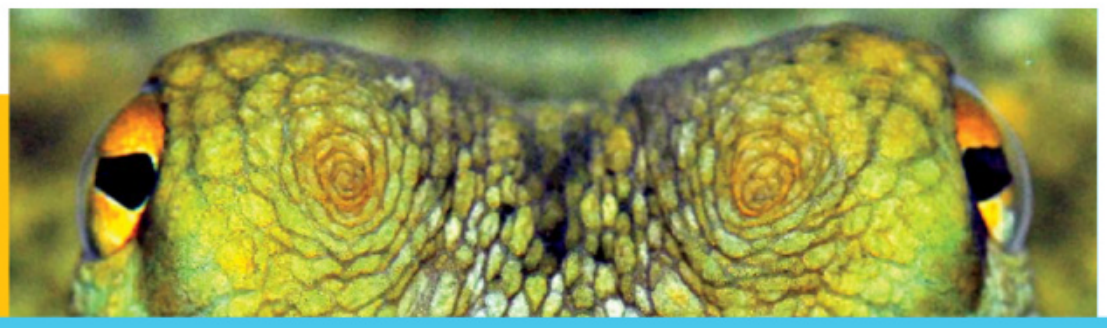


A **tarsier** might be tiny, but its eyes are bigger than its brain. And those enormous eyes help the nocturnal primate see better at night. A tarsier's eyes are fixed in its skull, but its head can turn 180 degrees to check out what's happening in its Asian forest habitat.

7 EYE SEE YOU

An eye the size of a soccer ball *better* win you the title of Biggest Eye of Any Animal on the Planet, and the **giant squid** definitely wins that competition. Its big eyes help the deep-sea cephalopod look out for its top predator: the sperm whale.

8 A LITTLE SHIFTY



An octopus's unique dumbbell-shaped pupil has a purpose besides just looking cool. It allows light to enter the lens from all different directions, helping them detect color. But their eyes aren't the only things doing the seeing: Some octopuses' *skin* can also detect light, which might explain why they're so good at camouflage.

AMAZING ANIMALS

Turtle Walks With Wheels

IN THE LEGO CONTRAPTION, THE TURTLE CAN DIG IN THE DIRT AND MOVE AROUND EASILY.

Baltimore, Maryland

When a wild eastern box turtle arrived at the Maryland Zoo with a broken bottom shell, caretakers wondered how to help. The vets could fix the fracture, but how would they keep the shell off the ground to heal?

That's when a vet student had an idea: a wheelchair made of Legos. He sent sketches to a Lego-loving friend, and the two created a design while the vets performed surgery on the turtle. A few weeks later, the zoo's medical team used putty to attach the DIY wheelchair to the edges of the turtle's top shell. "The minute we put the chair on, the turtle took off," lead veterinarian Ellen Bronson says. "You could tell it was feeling better."

The turtle will rest in an outdoor enclosure until its shell heals. Someday the reptile won't need its wheelchair anymore, and then it'll to go back to the wild. This turtle's really on a roll! —*Kitson Jazynka*

THE MARYLAND ZOO (TURTLE, BOTH); © PENNY COX (COW); LAURENT GESLIN / NATURE PICTURE LIBRARY (FOX)

Cow Scares Bear

Longmont, Colorado
Laid-back cows are usually no match for ferocious bears. Try telling that to Apple the cow, who chased a young black bear away after he stumbled into her pasture. "The bear jumped on top of a fence and got close enough to Apple that they were actually touching noses," says Penny Cox, who lives nearby and witnessed the action. After an intense stare-down between the curious animals, the bear fell off the fence and into the field. Then Apple chased him into the nearby woods. "She was bellowing and mooing the whole way," Cox says. Some people assumed Apple was fiercely protecting her property, but owner Nancy Dayton thinks her cow was simply being friendly. "It's easy to paint Apple as this threatening 'watch cow,'" she says. "But I think she saw the bear as a buddy and was just trying to play."

—Sarah Wassner Flynn

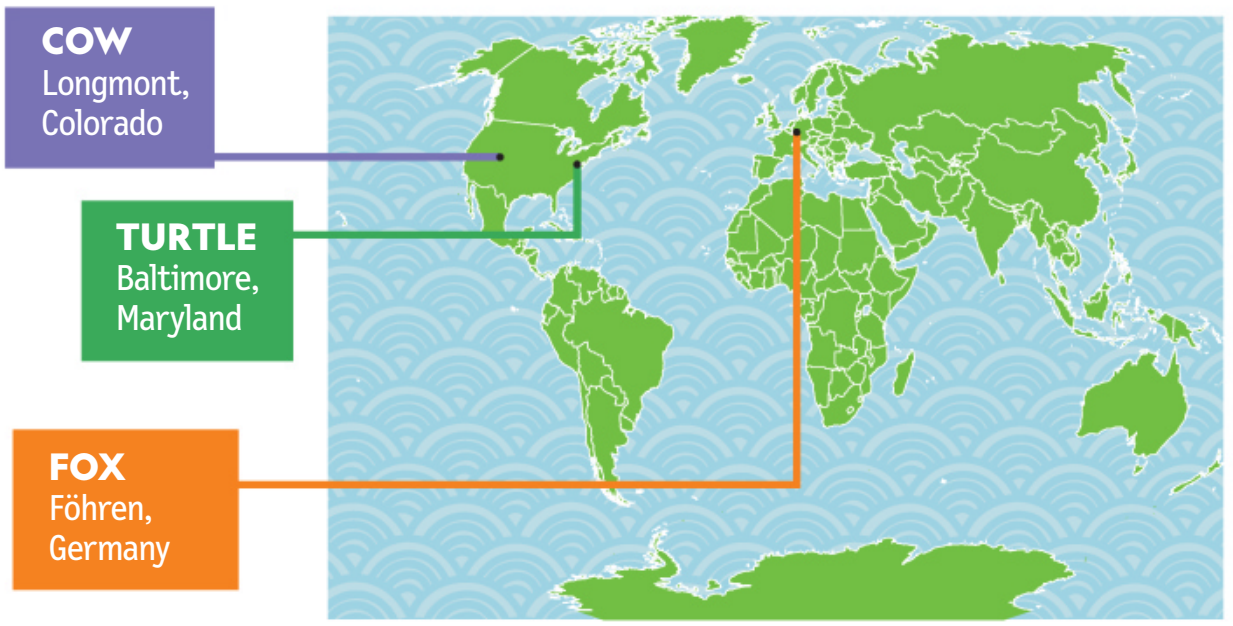
Fox Swipes Shoes

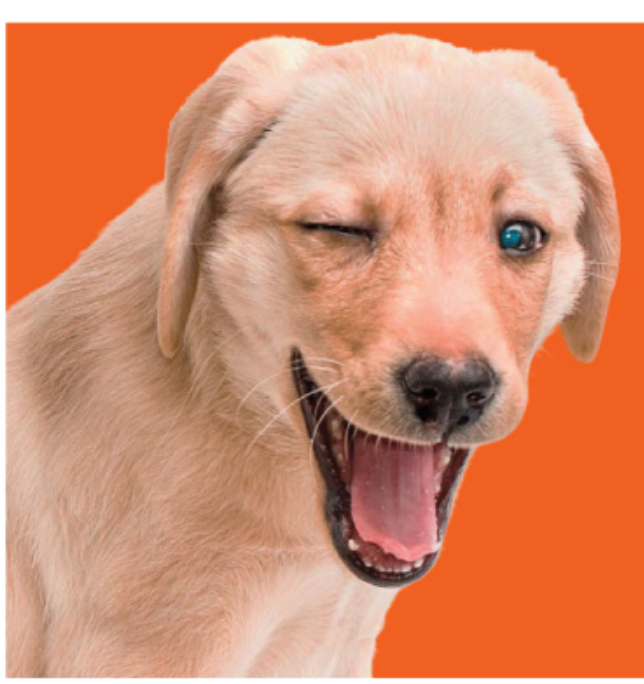
Föhren, Germany
Who'd want someone else's stinky shoes? That's what residents of one town wondered when their shoes started vanishing from their doorsteps. Suspects included neighbors, dogs—even their own kids. Then a forest worker discovered close to 250 shoes scattered near a fox den. A fox had outfoxed the town!

Why would a four-legged fur ball want a pair of shoes? Like dogs, foxes enjoy chewing and playing. John Hadidian, director of urban wildlife programs for the Humane Society of the United States, thinks the fox was probably just having fun. But that doesn't mean all foxes are shoe thieves. "This is probably one fox out of millions," he says. "She has in her head that she likes shoes."

The recovered shoes were displayed in town so residents could reclaim their footwear. As for the fox, she's moved on to new territory—but the townspeople now know better than to leave their shoes outside.

—Elisabeth Deffner





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WHAT'S SO FUNNY?

7 cool stories about animals' sense of humor

BY ALINE ALEXANDER NEWMAN AND JAMIE KIFFEL-ALCHEH

Do you ever feel like your dog is laughing at you? Research suggests maybe it is! Dogs make huffing noises that scientists think is essentially doggy laughter. They make the sound when they're inviting another animal or person to play. They also make it when they're tossing a toy around by themselves.

Gorillas, orangutans, and rats are among other animals that laugh. But does the ability to giggle mean these creatures have a sense of humor? No one knows for sure, but researchers are working to answer the question. Check out seven stories and decide for yourself if these animals' antics mean they find things funny.

1 TRICKY FOXES

Can a two-pound ball of fluff play a practical joke? Fennec fox keepers at the Endangered Wolf Center in Eureka, Missouri, think so. They've been tricked multiple times by **fennec fox pair Fezz and Daisy.**

The duo watches closely when staff enters their enclosure to clean it. The keepers wear treat pouches on the backs of their belts so they can give the animals snacks at the end of the day. But the foxes don't like waiting. "Daisy distracts us by doing this play bow: Her front legs go down, her butt goes in the air, and she wags her tail superfast," says Regina Mossotti, director of animal care and conservation. While the keepers are distracted by Daisy, Fezz swoops in and swipes a pouch. "They've fooled us a few times," Mossotti says. "Once Fezz gets away, he always turns around and looks like he's grinning, as if to say '*Ha!* We got you!'"

1ST ROW (LEFT TO RIGHT): ISSELEE / DREAMSTIME; SUKIYAKI / SHUTTERSTOCK; EVE81 / SHUTTERSTOCK. 2ND ROW (LEFT TO RIGHT): ERIC ISSELEE / SHUTTERSTOCK; JAGODKA / SHUTTERSTOCK; BRENDA CARSON / SHUTTERSTOCK. 3RD ROW (LEFT TO RIGHT): CSANAD KISS / SHUTTERSTOCK; ERIC ISSELEE / SHUTTERSTOCK; PAVEL HLYSTOV / SHUTTERSTOCK; MIRASWONDERLAND / SHUTTERSTOCK; WILLEE COLE / SHUTTERSTOCK. TAMBAKO / GETTY IMAGES (FENNEC FOX).
4TH ROW (LEFT TO RIGHT): FLY_DRAGONFLY / SHUTTERSTOCK;

2 SILLY SQUAWKER

Bongo Marie, an African gray parrot, was always picking on another parrot named Paco. One night, parrot behavior expert Sally Blanchard was cooking dinner at their home in Loveland, Colorado. Pulling a small chicken out of the oven, Blanchard set the steaming bird on the kitchen counter to carve. Curious, Bongo Marie moved in for a closer look. "Oh, no! Paco!" the parrot shrieked, tossing her head back and chuckling.

"That's not Paco," said Blanchard, laughing herself. She showed Bongo Marie that Paco was in the next room. "Oh ... *no*," repeated Bongo Marie, this time sounding disappointed before chuckling again. "I'm convinced she knew she was being funny," Blanchard says. "It was like she was laughing at her own joke."

3 FAKE OUT

Willie B., a gorilla at Georgia's Atlanta Zoo, was ready for playtime. Zookeepers thought he'd enjoy a game of tug-of-war, so they tossed one end of a thick rope into the ape's enclosure and handed the other end to a team of 10 men. When the gorilla picked up the line, the men started to pull. But then Willie B. stepped on the rope, and the men couldn't make him get off of it. The human team wasn't sure what to do next.

"Gorillas don't like to make eye contact," says Terry Maple, a psychology professor who was working at the zoo. "So Willie B. was glancing away from the men." Thinking the ape wasn't paying attention, the straining humans relaxed. That's when Willie B. lifted his foot and yanked the rope, causing the men to skid and fall into a heap. "He looked like he was laughing on the inside," Maple says. Gorilla, one; men, zero!

4 YOGA JOKESTER

Jean Donaldson of San Francisco, California, sat on the floor doing yoga exercises. Flashing a big, toothy grin, **Buffy the chow chow** excitedly waggled her rear end and stared at her owner. Donaldson stayed very still while twisted like a pretzel. Teetering on one of her shoulders was a rubber spider that Buffy had placed there. A weasel squeak toy and two stuffed animals stood at attention on her crossed legs. "Buffy would arrange her toys on me every time I did yoga," Donaldson says. When they fell off, Buffy would pounce, grab the fallen toy with her teeth, and carefully place it back on Donaldson's body.

"She thought it was hilarious," Donaldson says. "If Buffy were a person, she'd have probably drawn a mustache on my photo."

FUNNY-LOOKING CREATURE FEATURES

Some animals clown around while others, well, look like clowns! But often those goofy-looking features play important roles in a critter's survival.

GERENUK

A member of the antelope family, gerenuks (JER-uh-nooks) have wackily long necks. Why so stretchy? All that height helps them reach the tall plants they snack on.

JERBOA

With its tiny body and long hind legs and tail, the jerboa looks more like a Pokémon than a rodent. And when predators come around, its long legs and feet let it bounce away, animé-style. Its tail helps it balance as it springs through its desert home.

BLUE DOLPHIN CICHLID

Pucker up! The blue dolphin cichlid looks ready for a lipstick commercial, but the females actually use their puffy mouths to hold their eggs until they're ready to hatch.

YETI CRAB

Looking like a crustacean version of the Abominable Snowman, the yeti crab lives near hydrothermal vents, or areas where hot water gushes up from the ocean floor. The crabs wave their hairy arms near the vents to capture bacteria to chow on later.

FENNEC FOX

Measuring up to half the size of its body, a fennec fox's huge ears are sensitive enough to hear tasty rodents and reptiles moving underground.

CHECK OUT MORE SILLY ANIMALS!
natgeokids.com/june-july

KIT KORZUN / SHUTTERSTOCK (GORILLA); MIKAEL DAMKIER / DREAMSTIME (PARROT); BIGANDT.COM / SHUTTERSTOCK (DOG); JOEL SARTORE / NATIONAL GEOGRAPHIC PHOTO ARK / NATIONAL GEOGRAPHIC IMAGE COLLECTION (JERBOA); OLD DOG PHOTOGRAPHY / GETTY IMAGES (GERENUK); NATALIA SIDOROVA / SHUTTERSTOCK (CICHLID); © IFREMER / A. FIFIS / COURTESY M. SEGONZAC MNHN (YETI CRAB); VINNIE LAURITSEN / SHUTTERSTOCK (FENNEC FOX)

5 JUST KIDDING

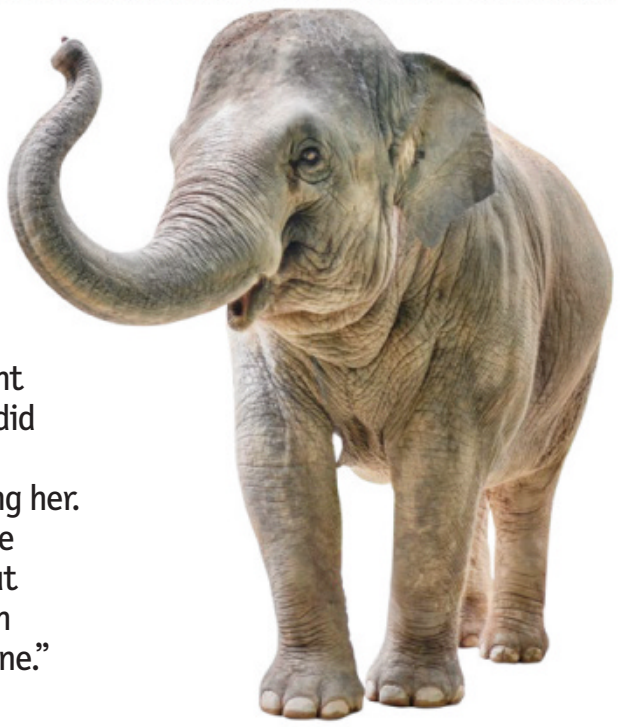
Deliberately hassling a grizzly bear would be too risky for most animals. But not for **a pack of gray wolves** resting in a meadow in Yellowstone National Park in Montana. When a bear lumbered into the area, the wolves formed a circle around the animal. Two wolves distracted the bear from the front, while another snuck around behind him. "The third wolf darted in and nipped the bear in the rear end," says wolf researcher Rick McIntyre, who works in the park. "Then the wolves ran away. We think they did that just for fun, to see if they could."

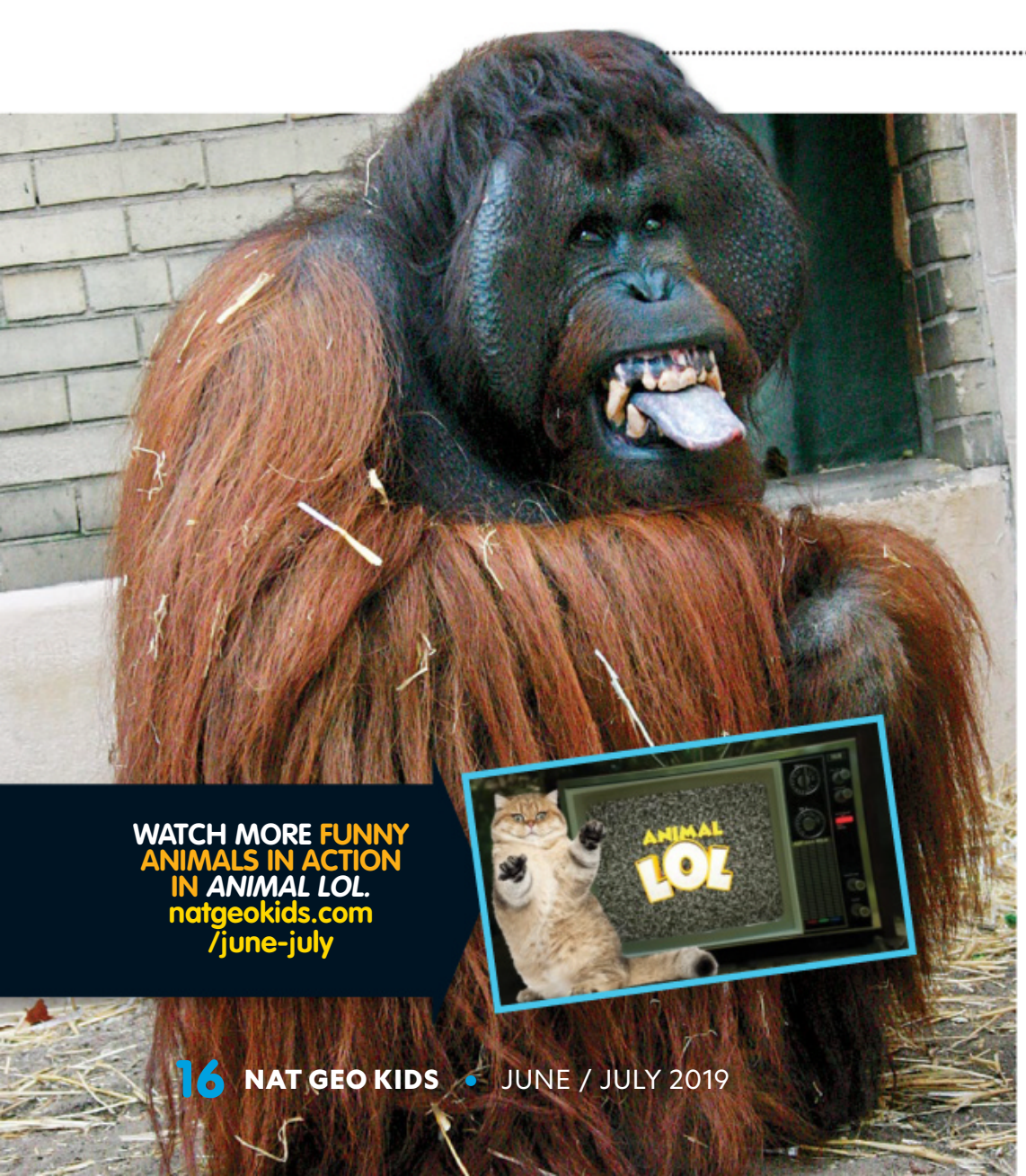
Wolves can control the force of their bite, and this nip was no more than a pinch. Still, considering it was several wolves against one bear, the teasing could've lasted all day. But it didn't. Why not? The bear sat down. Apparently he refused to be the "butt" of the joke!

6 GOTCHA!

Ambika the elephant is like that practical joker who offers to shake hands and then zaps you with a hand buzzer. A resident of the Smithsonian's National Zoo in Washington, D.C., Ambika used to eat next to a younger elephant named Shanthi. Both received a daily ration of apples, carrots, and sweet potatoes. "One day Ambika pushed her apples over to Shanthi," says Marie Galloway, the zoo's elephant manager. A friendly gesture, right? Shanthi thought so. She took the apples and gave Ambika her carrots. Little did Shanthi know that Ambika's motives weren't so pure.

By trading a few times, Ambika lulled Shanthi into trusting her. Then one morning the unsuspecting Shanthi reached for the apples and ... *ha!* Ambika kicked her! Shanthi wasn't hurt. But the joke was on her. "Ambika set her up," Galloway says. "If an elephant can have a sense of humor, Ambika definitely has one."





WATCH MORE FUNNY ANIMALS IN ACTION IN *ANIMAL LOL*. natgeokids.com/june-july

7 WATER GAMES

Can great apes be funny? "Definitely," says Rob Shumaker, president of the Indianapolis Zoo in Indianapolis, Indiana. At a zoo where he used to work, Shumaker was hosing down the orangutan enclosure on a hot day. **Junior, an adult male orangutan,** began begging for a drink. The ape was sitting on a platform higher than Shumaker's hose could reach, so the scientist flicked some drops toward the ape. Delighted, Junior laughed out loud. A long, playful water fight followed.

When Shumaker ended the game, Junior appeared to settle down. But he was actually just waiting. A huge puddle of water had collected on his platform. When Shumaker came to say goodbye to Junior, the laughing ape made one sweep of his arm, drenching the scientist. "He totally got me!" Shumaker says.

MEUNIERD / SHUTTERSTOCK (WOLF); SEVENKE / SHUTTERSTOCK (ELEPHANT); KARINE AIGNER / NG STAFF (ORANGUTAN); KLETR / SHUTTERSTOCK (CLOWNFISH); ILYA AKINSHIN / SHUTTERSTOCK (POLAR BEAR), IG_STUDIOE / SHUTTERSTOCK (ICE SKATES), IMAGE DIGITALLY COMPOSED; STEPHEN FRINK / STONE / GETTY IMAGES (DOLPHIN); SHIPPEE / DREAMSTIME (CHIPMUNK); MPH PHOTOS / SHUTTERSTOCK (DOG); VALERIO PARDI / SHUTTERSTOCK (FROG); WORLDPICS / SHUTTERSTOCK (COW). MARK C. ROSS / NATIONAL GEOGRAPHIC IMAGE COLLECTION (LIONS, PAGES 18-19)

ANIMAL LOL

Get a quick giggle with these critter-themed jokes, tongue twisters, and riddles.

TONGUE TWISTER

Say this fast three times:

Percy seeks special sea species.

Q How do animals in the Arctic travel quickly on the ice?

A On polar skates

KNOCK, KNOCK.

Who's there?
Kelp.
Kelp who?
Kelp me find some sea snacks!

KNOCK, KNOCK.

Who's there?
Cash.
Cash who?
No, thanks. I prefer walnuts.

KID: How much does it cost to adopt a dog?
ADULT: Ten dollars apiece.
KID: Ten dollars a piece? I wanted one that was already put together!

TONGUE TWISTER

Say this fast three times:

Hogwarts sports frog warts.

Q What kind of cow is very rich?

A A cash cow

CHECK OUT THIS BOOK!

NATIONAL GEOGRAPHIC KiDS

When lion cubs play, they're also practicing hunting skills they'll use as adults.

You can tell these big cats apart by the

spots at the base of their whiskers.

Besides Mom, aunts and big sisters help take care of all the cubs in a lion pride.

Xtreme Illusions

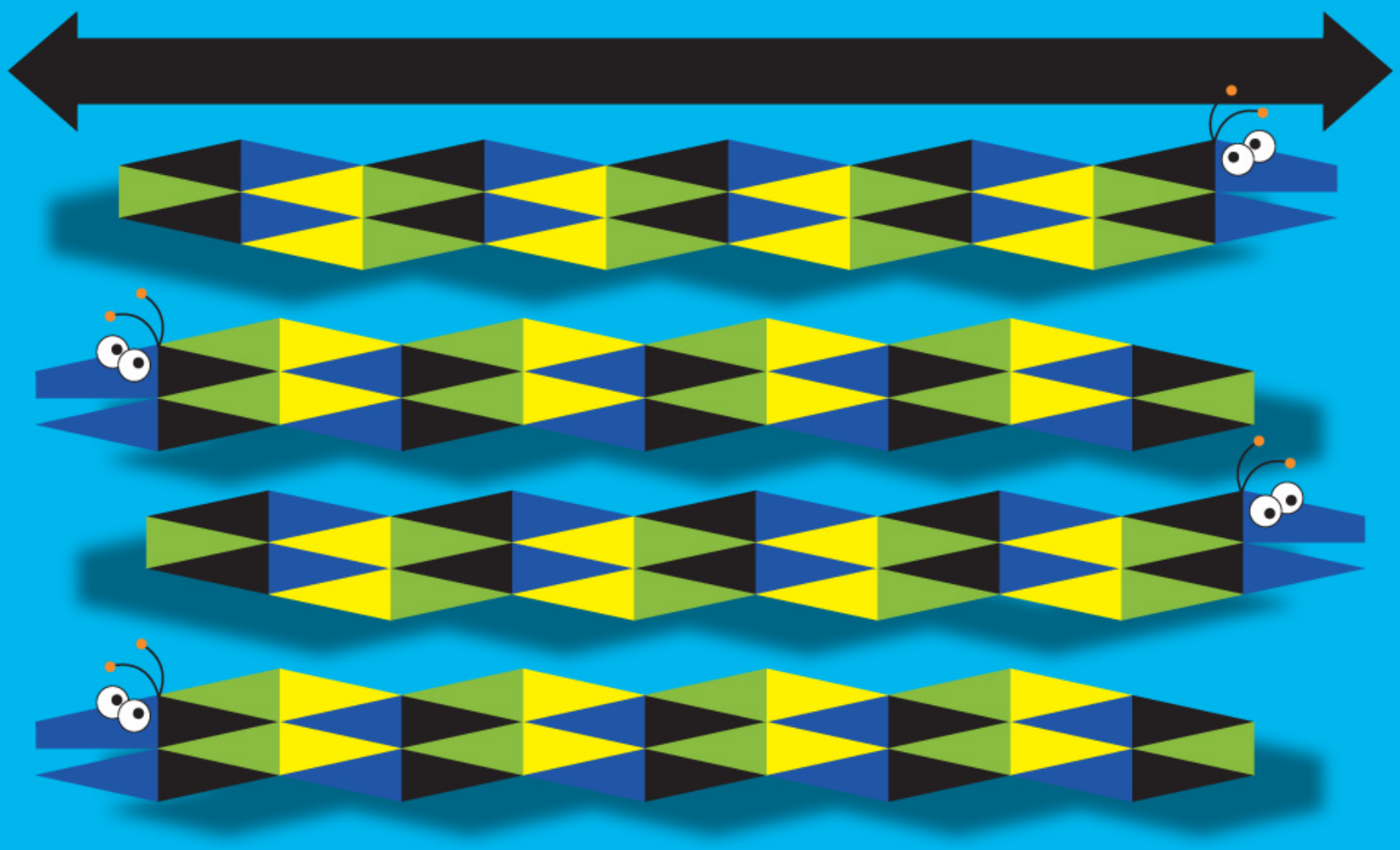
Tricky pics that will boggle your brain

Get ready to be amazed! Optical illusions use colors, patterns, shadows, and other things to trick your brain into seeing something that's not there. But here's the really tricky part: Most people *see* an illusion the same way, but often they *interpret* it differently. In fact, scientists are studying how people react to illusions to learn more about the brain. So while you're having fun here, you might actually be contributing to science!

FRUIT SALAD

DO THIS: Stop staring at this yummy display of fruit and see if you can find the two people on either side of it.

WHAT'S UP: Your brain quickly sees the colorful fruit, then notices the two faces created by the outline of the fruit. Your brain "flips" between the two views. This is called a figure-ground illusion: The fruit is the figure (the main object), and the faces are the ground (the background).



CREEPY CRAWLY

DO THIS: Move your eyes over these caterpillars and watch them wiggle left and right.

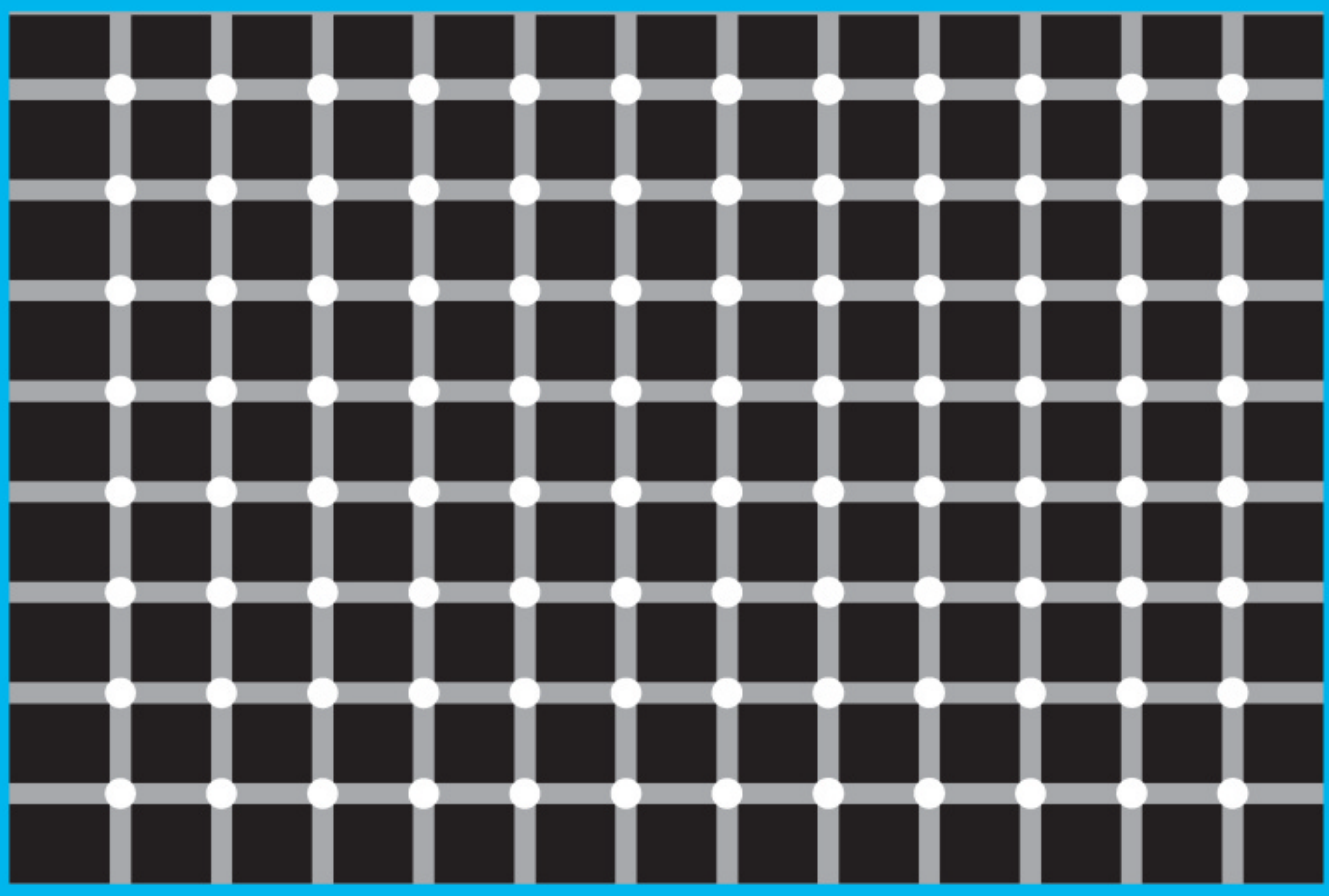
WHAT'S UP: The caterpillars aren't stacked perfectly, one above the other. But your brain wants them to look neat, so it makes the caterpillars "creep" into line. The effect is increased by the shadows, which point away from the caterpillars' heads.

CHECK OUT THE BOOK!

PATTERN PUZZLE

DO THIS: Shift your eyes around this grid and watch as the dots change from gray to white to gray again.

WHAT'S UP: Looking at one dot shows that it's white. But when you look slightly to the side, your brain saves time and effort by guessing that the gray lines continue through the dot. So the dot looks gray too, even though it's actually white.



CARLTON BOOK PACKAGERS (ALL IMAGES); REPRINTED WITH PERMISSION FROM THE BOOK *XTREME ILLUSIONS*, COPYRIGHT © 2012 NATIONAL GEOGRAPHIC SOCIETY. ALL RIGHTS RESERVED.

EPIC SCIENCE FAILS

Nat Geo explorers spill their most embarrassing moments.

BY ALLYSON SHAW

Even scientists goof up sometimes! These Nat Geo explorers share some of their wildest slipups and hardest fails.

goof-o-meter

SNEAKY MONKEYS

THE SCIENTIST: Susan Perry
COOL JOB: Anthropologist
THE LOCATION: Costa Rica, a country in Central America

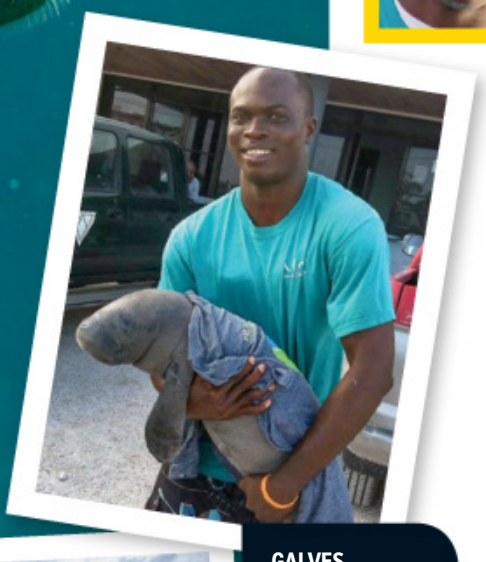
"I needed to get hair samples from some wild capuchin monkeys without getting too close. I thought I had a great idea: Put transparent double-sided tape on the shells of eggs—one of their favorite treats—so their hair would stick to the tape when they cracked open the shells. My team and I put the sticky eggs on the forest floor and waited. The 21 monkeys were excited when they first saw the hard-boiled eggs, but when they got closer, they realized something wasn't right. They made 'threat faces' at the eggs as they gently poked them and were careful to not touch the tape.

"Then they slowly cracked the eggs, picked off the shells, and ate each one—without ever touching the tape! The monkeys had outsmarted me, so I had to find another way to gather the info I needed: picking up monkey poop."

goof-o-meter

MANATEE MADNESS

THE SCIENTIST: Jamal Galves
COOL JOB: Conservation biologist and Nat Geo Photo Ark EDGE Fellow
THE LOCATION: Belize, a country in Central America



GALVES TRANSPORTS AN ORPHANED MANATEE TO A RESCUE CENTER.

USING SATELLITE TECHNOLOGY, GALVES TRACKS A TAGGED MANATEE.

"One day we brought a wild manatee aboard our boat to study its health. The 800-pound animal started to thrash around, making the checkup really difficult.

"Everyone else jumped into the water to avoid getting thwacked by the powerful manatee, but I hung on to the edge of the boat. I laughed at everyone else because they were soaking wet. The feisty manatee seemed to calm down enough to take measurements, but then it started to squirm again, knocking me into the water along with my only dry shirt, hat, and sunglasses.

"The lesson? No matter how well I plan, somehow the manatees never seem to cooperate!"

KATHRYN PERRY (PERRY); SUSAN PERRY (MONKEYS); ARTHUR WONG (GALVES PROFILE); GIOVANNI GROTTO / ALAMY STOCK PHOTO (MANATEE); GILLIAN KIRKWOOD (GALVES WITH MANATEE); AVERY SEGURA (ON BOAT)

goof-o-meter

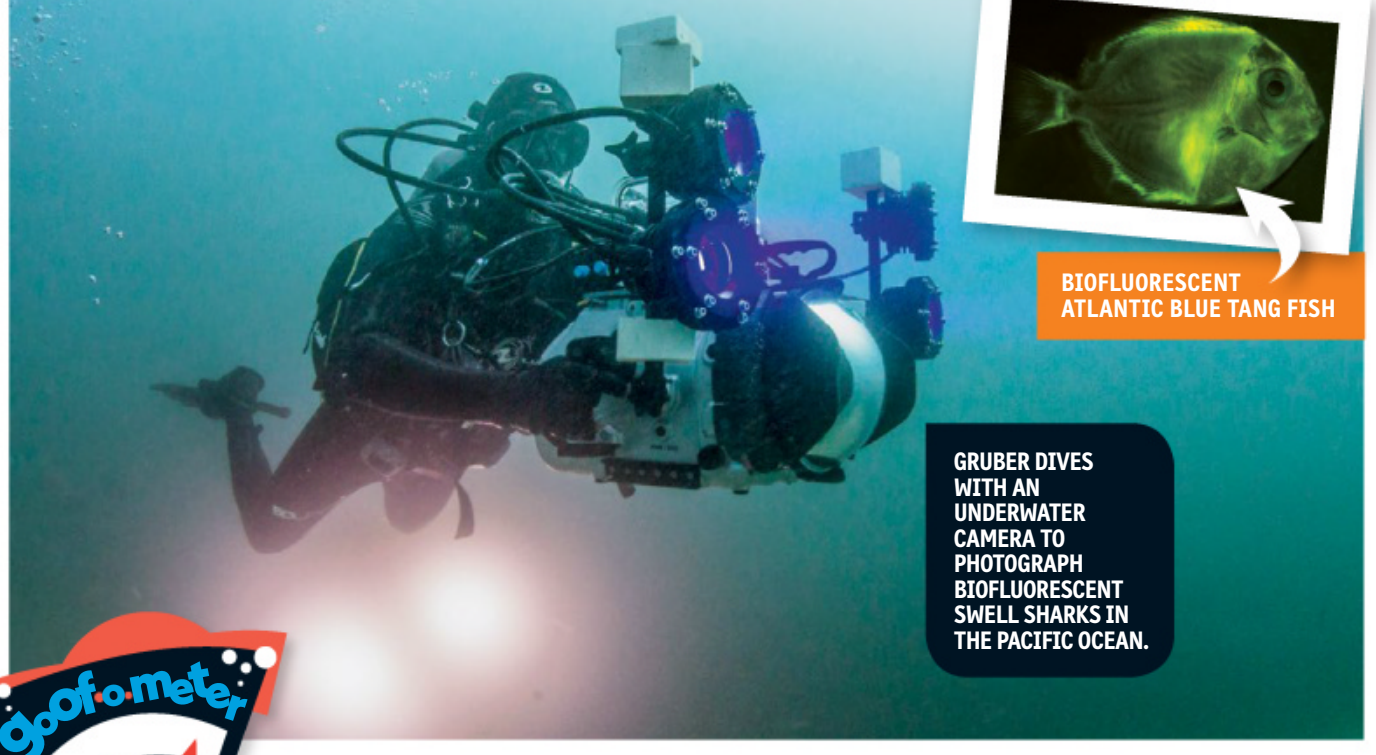
SEASICK SCUBA

THE SCIENTIST: David Gruber
COOL JOB: Marine biologist
THE LOCATION: Off the coast of the Bahamas

"We were on a boat about to dive in search of animals that could biofluoresce (meaning their skin absorbs natural light and reflects it as another color). But on that day, 12-foot-high rolling waves were pushing our boat up and down ... and I was totally seasick.

"I was so queasy that I couldn't get my scuba gear on, and eventually my fellow scientists got tired of waiting. So they threw me into the water and tossed in my gear and tank right behind me! That forced me into action. I quickly put my breathing regulator in my mouth, and I put on my mask and vest as I sunk down. Once I was beneath the waves, I started to feel normal again.

"Before I hit the water, all I wanted to do was just puke and give up—but it's a good thing I didn't. Luckily I knew how to put on my scuba gear underwater, so that day I made a huge discovery: Atlantic blue tang fish can biofluoresce!"



GRUBER DIVES WITH AN UNDERWATER CAMERA TO PHOTOGRAPH BIOFLUORESCENT SWELL SHARKS IN THE PACIFIC OCEAN.

BIOFLUORESCENT ATLANTIC BLUE TANG FISH

goof-o-meter

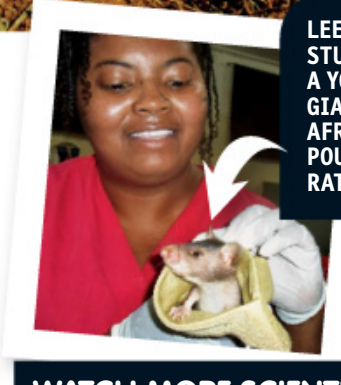
RAT TRAP

THE SCIENTIST: Danielle N. Lee
COOL JOB: Biologist
THE LOCATION: Tanzania, a country in Africa

"Giant African pouched rats are special: They can save lives by sniffing out buried explosives and disease-causing bacteria. One day my team and I were studying these 'pouchies,' but I was tired and couldn't find my protective gloves. I should have known trouble was coming.

"While I held the measuring tape stretched between one pouched rat's tail to near its nose, the pouchie sunk its razor-sharp teeth into my thumb. Usually they bite quickly then run away, but this female wouldn't let go. Three other people had to help open her mouth and pry her off me. I learned two important lessons that day: Always wear safety equipment, and never do science when you're tired."

LEE'S RESEARCH HELPS OTHER SCIENTISTS TRAIN MINE-SNIFFING RATS LIKE THIS ONE.



LEE STUDIES A YOUNG GIANT AFRICAN POUCHED RAT.

goof-o-meter

WILD DO-OVER

THE SCIENTIST: Ricardo Moreno
COOL JOB: Wildlife biologist
THE LOCATION: Panama, a country in Central America

"We wanted to put radio collars on wild ocelots to learn more about their behavior. So we placed bait in metal traps, hoping the food would tempt an ocelot to walk in.

"We caught one, but as I excitedly moved to sedate the cat, it pushed open the trap door, knocked me over, and ran off. I tried to chase it, but it was already gone—I'd never catch a sprinting ocelot.

"Feeling defeated, we checked on our other traps, even though it's extremely rare to capture two ocelots in one day. But in one of the last traps was another ocelot! We knew we had to learn from my overeager mistake. This time we calmly approached the trap from behind and were able to sedate the cat and put the collar around its neck. We got lucky."

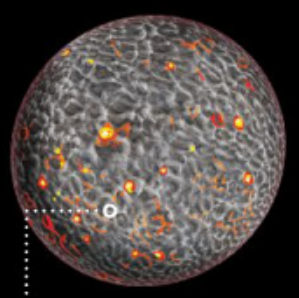
MORENO (RIGHT) AND HIS TEAMMATES PLACE A RADIO COLLAR ON AN OCELOT IN PANAMA.

WATCH MORE SCIENTISTS IN ACTION IN THE VIDEO SERIES *EXPLORER ACADEMY: THE TRUTH BEHIND.* ExplorerAcademy.com/videos

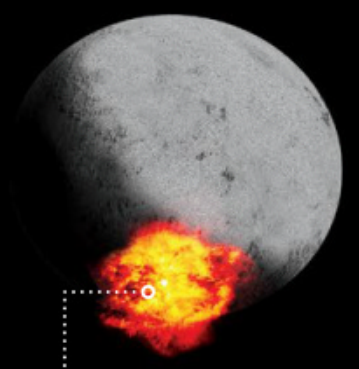
KAT KEENE HOGUE / NATIONAL GEOGRAPHIC IMAGE COLLECTION (GRUBER PROFILE); KYLE MCBURNIE (GRUBER DIVING); DAVID GRUBER (FISH); JORGE MUÑOZ (MORENO PROFILE); EILLIT BROWN (MORENO WITH TRAP); BEPPEVERGE / GETTY IMAGES (OCELOT); ALECIA HOYT PHOTOGRAPHY (LEE PROFILE); COURTESY DANIELLE LEE (RAT, LEE WITH RAT)

EVOLUTION OF THE MOON

ABOUT 4.5 BILLION YEARS AGO:
A giant collection of tiny rocks floats in space. Captured by Earth's newly expanded gravitational field—or the force that causes objects to fall toward its center—the debris forms into a ring structure that looks a lot like Saturn's rings. After a smashup between Earth and a Mars-size object, the moon begins to solidify into a spinning hot, liquid blob made from these dust rings.



SOME 4.4 BILLION YEARS AGO:
When the moon's spin on its axis slows down, it starts to cool, and its surface begins to transform into a solid crust. The moon begins to take an oblong, lemon-like shape, with its two ends pointing toward and away from Earth. (From Earth, the moon deceptively looks like a perfectly round ball, like the one above, because of the angle we view it from.)



ROUGHLY 3.9 BILLION YEARS AGO:
A massive asteroid about 125 miles in diameter slams into the far side of the moon, creating the Aitken Basin on the moon's South Pole. Some 1,600 miles in diameter and approximately eight miles deep, it's one of the largest known impact craters in the entire solar system.

FREAKY FACTS ABOUT THE MOON

THINGS YOU NEVER KNEW ABOUT OUR MYSTERIOUS NEIGHBOR IN THE SKY

TEXT AND ILLUSTRATIONS BY DAVID A. AGUILAR

The moon is Earth's closest celestial neighbor, covered with huge craters, rugged mountains, and flat, gray plains formed from lava that flowed across its surface *billions* of years ago. **But it wasn't until 50 years ago that people finally walked on its surface, when astronaut Neil Armstrong became the first human to step on lunar soil on July 20, 1969.** Scientists are anxious to go back. But why return when there are still unexplored spots to visit in our solar system?

Faced with threats such as overpopulation and climate change on Earth, our easy-to-reach neighbor could help people survive in the future. (The extremely faraway future, that is!) Many experts believe that the moon is our next step in learning how to live in space. Exploration missions to the moon might even be possible in the next decade.

But before you pack your bags, gear up for an intro to what some scientists call "Earth's sidekick." Discover when the moon was formed, how it stacks up to Earth, and what living on a moonless planet would be like. Launch into these extraordinary details about our moon.

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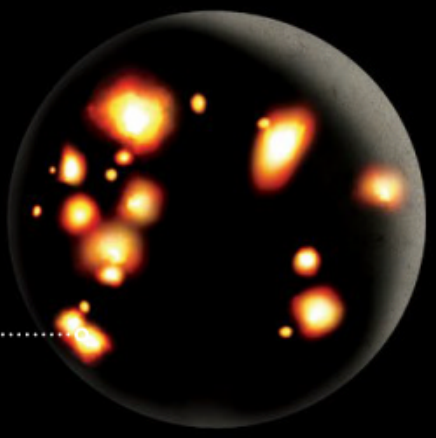
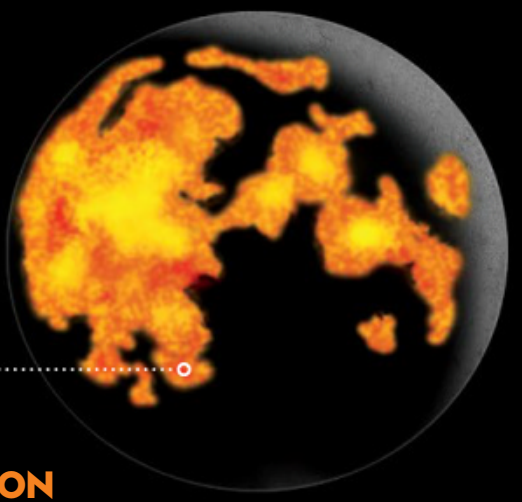


ABOUT 3.8 BILLION YEARS AGO:
Something—perhaps the movements of the outer planets—causes rocky debris to fly toward the sun. These asteroids also pound the surface of the moon.



ONE BILLION YEARS AGO:
The large asteroid impacts that were constantly hitting the moon temporarily end. But the violent activity isn't over. The moon's near side—the side facing Earth—breaks out into volcanic activity, sending out vast oceans of molten lava.

TODAY:
Early observers mistook solidified lava beds on the moon's surface as seas because they look blue during the day from Earth. Observers even named them *maria*—the Latin name for "lunar seas." Water doesn't flow on the moon's surface, but scientists have discovered water molecules in the moon's polar regions.

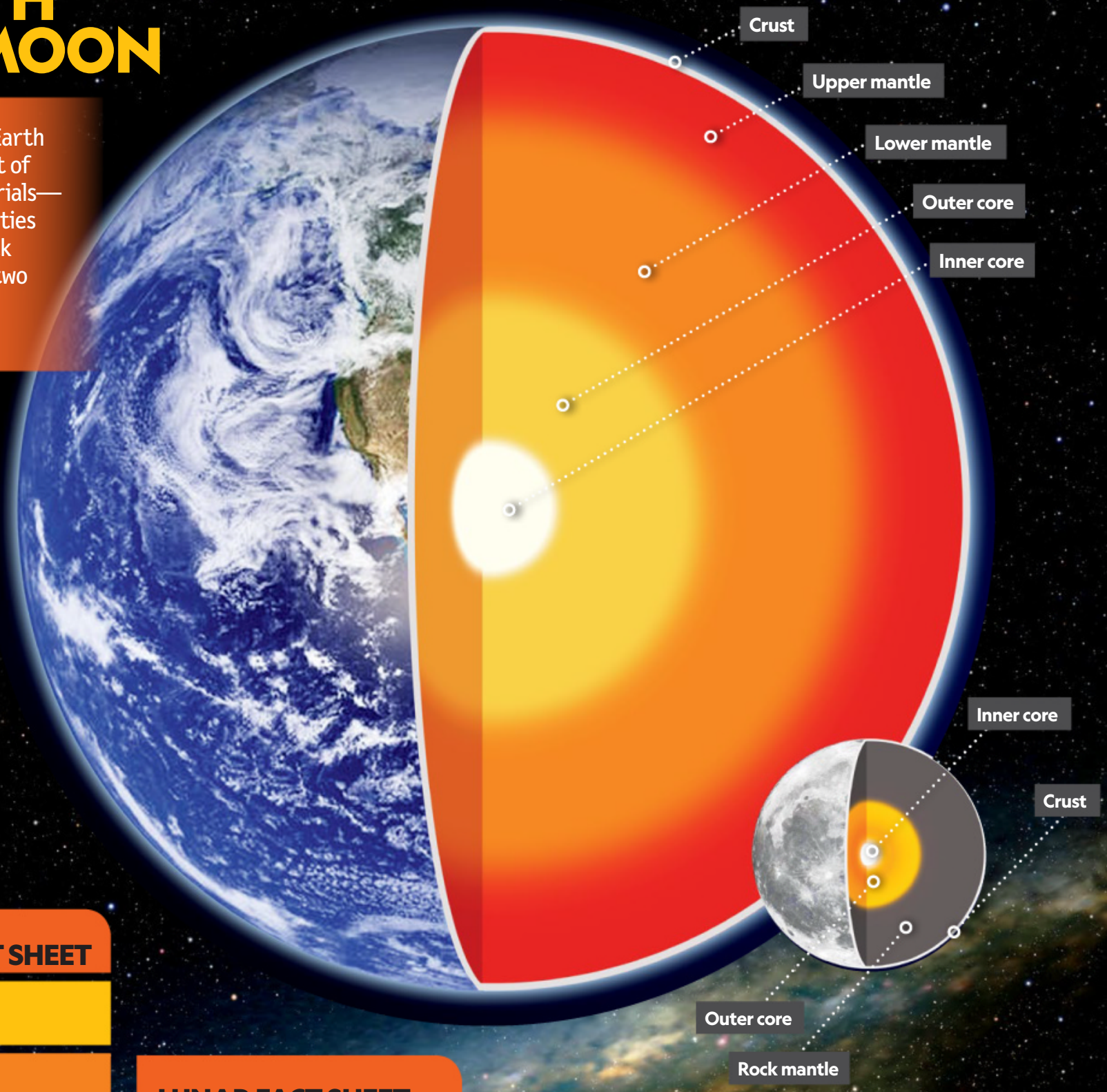
LESS THAN A BILLION YEARS AGO:
Renewed asteroid impacts with the moon's surface form many of the small and medium-size craters we see today. These younger craters have star-like patterns radiating from their centers. They were created when huge impacts caused light-colored rock lying under the moon's surface to blast out, then gently settle back down onto the surface.

Earth is a planet. The moon—about one-quarter the size of Earth—is a satellite that orbits Earth.

GET MORE SPACE STUFF!
natgeokids.com/june-july

EARTH VS. MOON

The moon and Earth were forged out of the same materials—but the similarities end there. Check out how these two very different rocks stack up.



EARTH FACT SHEET

Length of day:
24 hours

Diameter:
7,917 miles

Highest temperature:
136°F

Lowest temperature:
Minus 126°F

LUNAR FACT SHEET

Length of lunar day:
27.3 Earth days

Diameter:
2,160 miles

Surface temperature (day):
273°F

Surface temperature (night):
Minus 245°F

The interior of both the Earth and the moon are hot. Magma (hot, liquid rock) from Earth's mantle still erupts onto its surface. But it doesn't on the moon.

LIFE WITHOUT THE MOON

Without our moon, life on Earth would be totally different. Days would be shorter, for instance. Without the moon and its gravitational pull slowing down the rotation of the Earth, our day might only last six to eight hours instead of 24.

And forget about spring break or fall leaves—the seasons wouldn't exist. Without the moon's pull on it, Earth might wobble on its axis like a dangerously spinning top, creating hundred-mile-an-hour winds and massive hurricanes one day, with relatively calm weather and totally different temperatures the next. Plus, it would be almost pitch-black every night of the year.

Oh, and humans might not even exist. That's because without the moon, most creatures would call the ocean home. Less than a half billion years ago, all life on Earth was living in the seas. Bizarre and colorful creatures swam freely through the water or scurried around the bottom. Mounds of hardened black lava poked above the waves. There were no palm trees—or any trees, for that matter. They didn't exist yet. Only a few species of hardy green plants had made the transition onto land.

So how did the moon help more species adapt to life on land? The gravitational pull of the moon creates high and low tides in the ocean. During low tide, water recedes back into the ocean, exposing tide pools—shallow pools of salt water on beaches and nearby rocks—to the air. Millions of years ago, the resilient life-forms that lived in tide pools evolved new adaptations that helped them survive dry spells.

Eventually they left the oceans to live on land. These early land explorers evolved into amphibians, dinosaurs, birds, insects, snakes, and mammals. (Hi, humans!) But without the moon, low tide wouldn't exist, and these creatures would've stayed underwater forever.

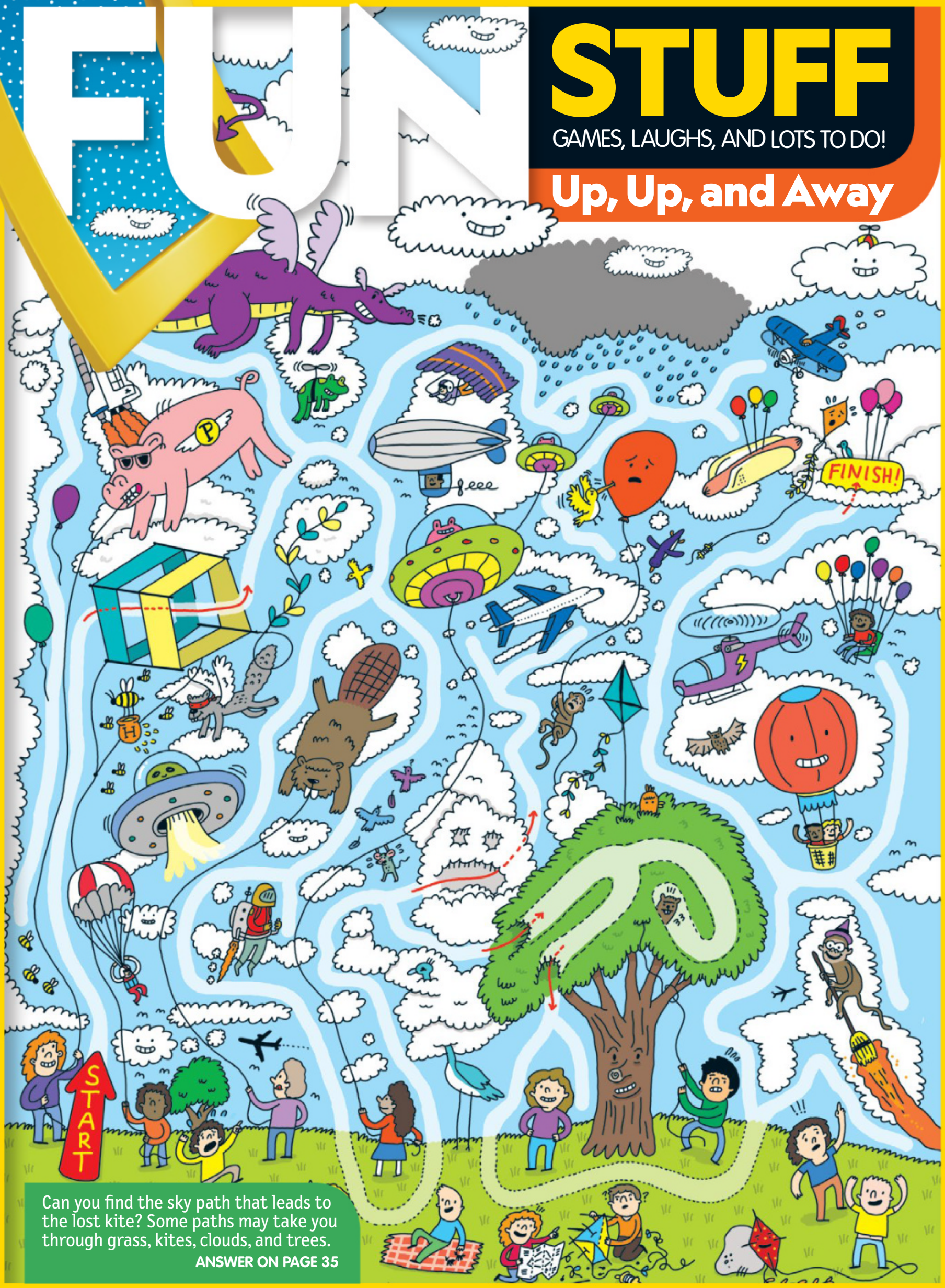
Ancient Romans called the moon *luna*, which is Latin for moon.

WIN THIS BOOK!
TRY ONLINE MAY 23-30.
natgeokids.com/june-july

FUN STUFF

GAMES, LAUGHS, AND LOTS TO DO!

Up, Up, and Away



Can you find the sky path that leads to the lost kite? Some paths may take you through grass, kites, clouds, and trees.

ANSWER ON PAGE 35

WHAT IN THE WORLD?

FOR YOUR AMUSEMENT

These photos show close-up and faraway views of things you might find at an amusement park or carnival. Unscramble the letters to identify what's in each picture. **ANSWERS ON PAGE 35**

CHECK OUT THE BOOK!

NELFNU KECA

DCAARE MEAG

WISGN LOUACRSE

LEORLR ASCRTEO

EIC AMCER

SEIPRZ

URBEPM ACSR

NTCTOO NAYCD

ERFSIR ELHEW

TOP ROW (LEFT TO RIGHT): JAMES NESTERWITZ / ALAMY; GARRY GAY / ALAMY; TOMMY ATTHI / SHUTTERSTOCK. MIDDLE ROW (LEFT TO RIGHT): ANDREYZH / SHUTTERSTOCK; ARINA P HABICH / SHUTTERSTOCK; TODD GIPSTEIN / CORBIS / GETTY IMAGES. BOTTOM ROW (LEFT TO RIGHT): A_LESIK / SHUTTERSTOCK; AFRICA STUDIO / SHUTTERSTOCK; RON CHAPPLE PHOTOGRAPHY INC. / MEDIAMAGNET / SUPERSTOCK.

FUNNY FILL-IN

GO FISH

Ask a friend to give you words to fill in the blanks in this story without showing it to him or her. Then read out loud for a laugh.

BY JILL FANSLAU

PLAY MORE FUNNY FILL-IN!
natgeokids.com/ffi

My granddad is the _____ (adjective ending in -est) fisherman of all time. Once he even reeled in a(n) _____ (large number)-pound _____ (animal)! I couldn't wait for him to teach me how to _____ (verb) a boat. We packed the tackle box full of _____ (insect, plural) and rowed our wooden _____ (noun) into the middle of the _____ (type of fish) River. Things were going _____ (adverb ending in -ly) until I noticed the boat was filling up with _____ (liquid). Thinking quickly, I used a(n) _____ (noun) to scoop out the water while Gramps tried to plug the hole with his _____ (type of clothing). But the boat was _____ (verb ending in -ing) as fast as a(n) _____ (heavy object). I yelled, "Abandon ship!" and _____ (past-tense verb) overboard. I started _____ (verb ending in -ing) to shore as fast as I could. Just then I heard Gramps laughing. That's when I realized the water only came up as high as my _____ (body part). Feeling _____ (adjective), I _____ (past-tense verb) back to the boat. We stayed and fished in our half-sunk boat for hours. By the end of the day we had caught _____ (number) fish! Then we walked back to shore, _____ (verb ending in -ing) the _____ (adjective) boat behind us.

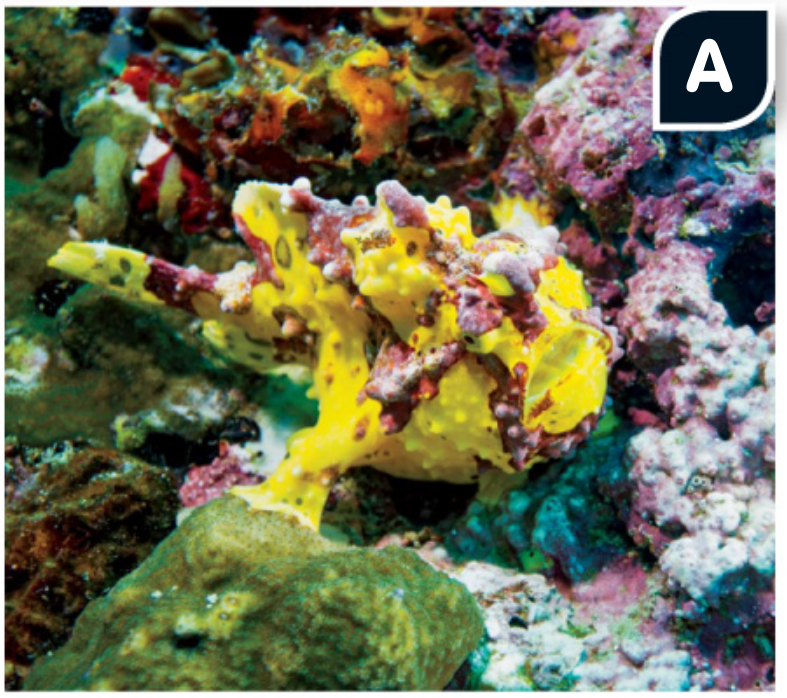
DAN SIPPLE

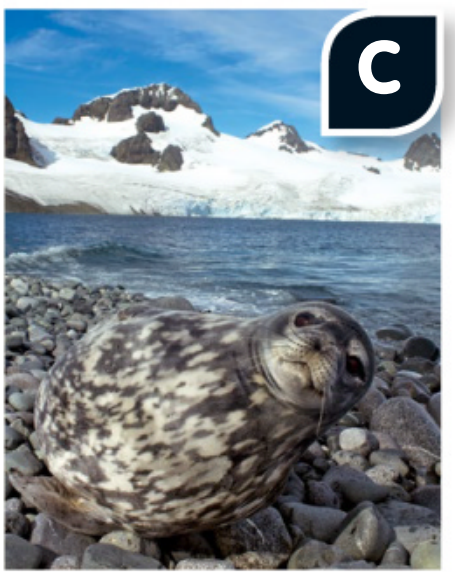
FIND THE HIDDEN ANIMALS

Animals often blend in with their environments for protection. Find each animal listed below in one of the pictures. Write the letter of the correct photo next to each animal's name.

ANSWERS ON PAGE 35

1. crabs _____
2. hare _____
3. alligator _____
4. praying mantis _____
5. seal _____
6. frogfish _____





GERARD SOURY / GETTY IMAGES (A); ADEGSM / GETTY IMAGES (B); STEVEN KAZLOWSKI / NATURE PICTURE LIBRARY (C); TAJA PLANINC / GETTY IMAGES (D); DON PAULSON PHOTOGRAPHY / PURESTOCK / SUPERSTOCK (E); ROY TOFT / NATIONAL GEOGRAPHIC STOCK (F)

EXPLORER ACADEMY

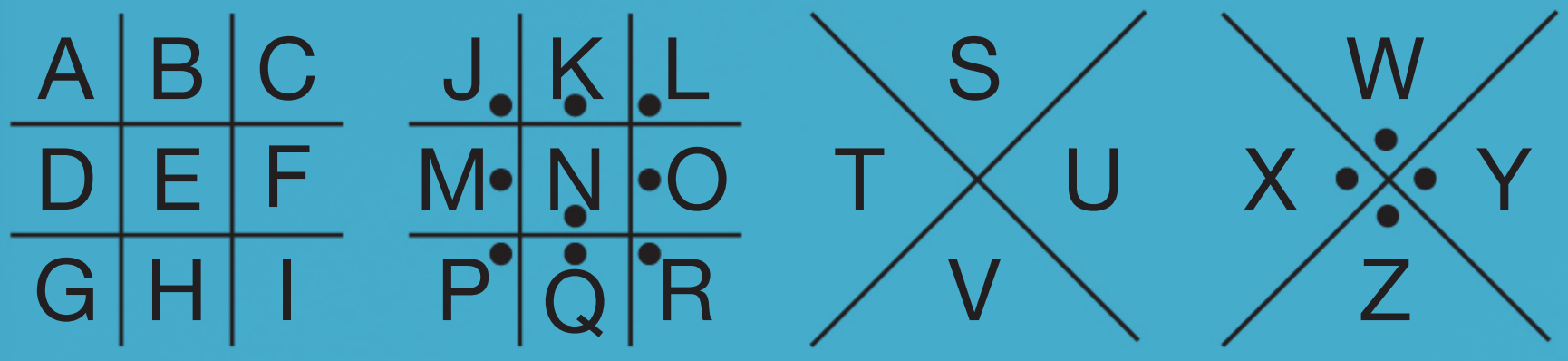
In the new book *Explorer Academy: The Falcon's Feather*, 12-year-old Cruz Coronado breaks secret codes in order to fight dangerous villains and solve mysteries. Test your own skills by cracking the code on this page, then check out more about the book at **ExplorerAcademy.com**.

TEXT AND PUZZLE BY GARETH MOORE

THE CODE: PIGPEN CIPHER

This code puts letters into boxes, or pens, giving it its name: the pigpen cipher. Each letter is represented by the section of the grid it's in. (In the key below, the dots are next to the letters. But in the coded message, the dots are placed in the center.) Check out the pigpen alphabet below.

THE PIGPEN ALPHABET

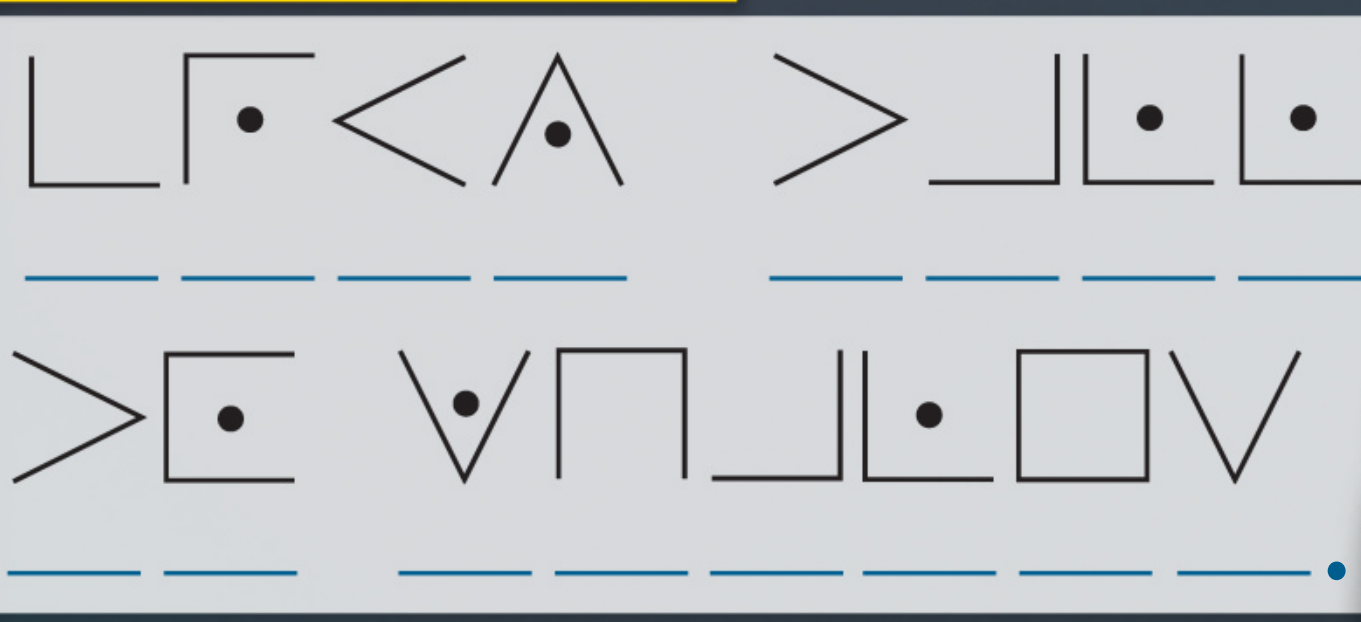


So you write **FEATHER** like this:

CRACK THIS CODE!

Using the pigpen alphabet, decode the message below.

ANSWER ON PAGE 35



CHECK OUT THE BOOK!

BREAK MORE CODES!
ExplorerAcademy.com

RYAN ETTER / IKON IMAGES / GETTY IMAGES (HEADER BACKGROUND); SHUTTERSTOCK (MAP BACKGROUND)

kids vs. PLASTIC

Part of the PLANET OR PLASTIC? initiative

MAKE THIS CUTLERY HOLDER TO AVOID THAT PLASTIC UTENSILS

BY ELLA SCHWARTZ

CUT OUT PLASTIC CUTLERY

Help keep the Earth healthy by ditching single-use plastic items. This month, make a cutlery holder to carry reusable forks, spoons, and knives so you can skip the plastic utensils. Why? Litter from take-out meals is a common type of trash found during beach cleanups.

MATERIALS

- Old pair of pants*
- Ruler
- Scissors
- Hot-glue gun
- Decorations like buttons, pins, lace, and patches

*Select a pair that you don't wear anymore—and have permission to cut up!

PLANET PROTECTOR TIP Wash your cutlery holder in the laundry if your used utensils get it dirty.

STEPS

1. Lay one pant leg across a clean surface, making sure the fabric doesn't have any wrinkles. With the ruler, measure 10 inches from the bottom of the pant leg and cut a straight line across.

2. Cut open the pant leg along both seams. You should now have two cloth rectangles. Put one on the table with the outer part of the pants facing you.

3. Grab a parent and use the hot-glue gun to put lines of glue around one long side and both short sides of the rectangle, stopping about an inch from the other long side.

4. Align the other rectangle on top, with the inside of the pants facing you. Press the two pieces of cloth together.

5. Fold one of the unglued sides toward the outside of the pouch to make a clean seam, and use the hot-glue gun to secure this flap in place. Repeat this step on the other side.

6. Once the glue has dried, turn the pouch inside out.

7. Cut another strip of fabric from the pants, about 12 inches long and 1 inch wide. Place the pouch in front of you so the open end is at the top.

8. Place a small dab of glue in the center of one side of the pouch, then press the middle of the strip lengthwise at this point.

9. Decorate the outside of your cutlery holder. Pack your utensils in the pouch, rolling it closed and tying it with the strip of fabric.

MARK THIESSEN / NG STAFF (ALL)

WATCH A COOL VIDEO TO MAKE A DIY PLASTIC-FREE PENCIL CASE! Then learn how to talk to restaurants about ditching plastic cutlery, plus more Earth-saving tips! **natgeokids.com/KidsVsPlastic**

ART ZONE

LIONS FOREVER

These posters celebrate *Nat Geo Kids* readers' love of lions and the importance of protecting them.

THE WINNER!

Take a look at the winning poster and some of the runners-up of the **Lions Forever ALMANAC CHALLENGE!**

Go online to see all the runners-up.

natgeokids.com/june-july

◀ **Nora B.,** 12, Severna Park, Maryland

▼ **Paige W.,** 12, Hayden, Idaho

▲ **Lilah P.,** 10, St. Louis, Missouri

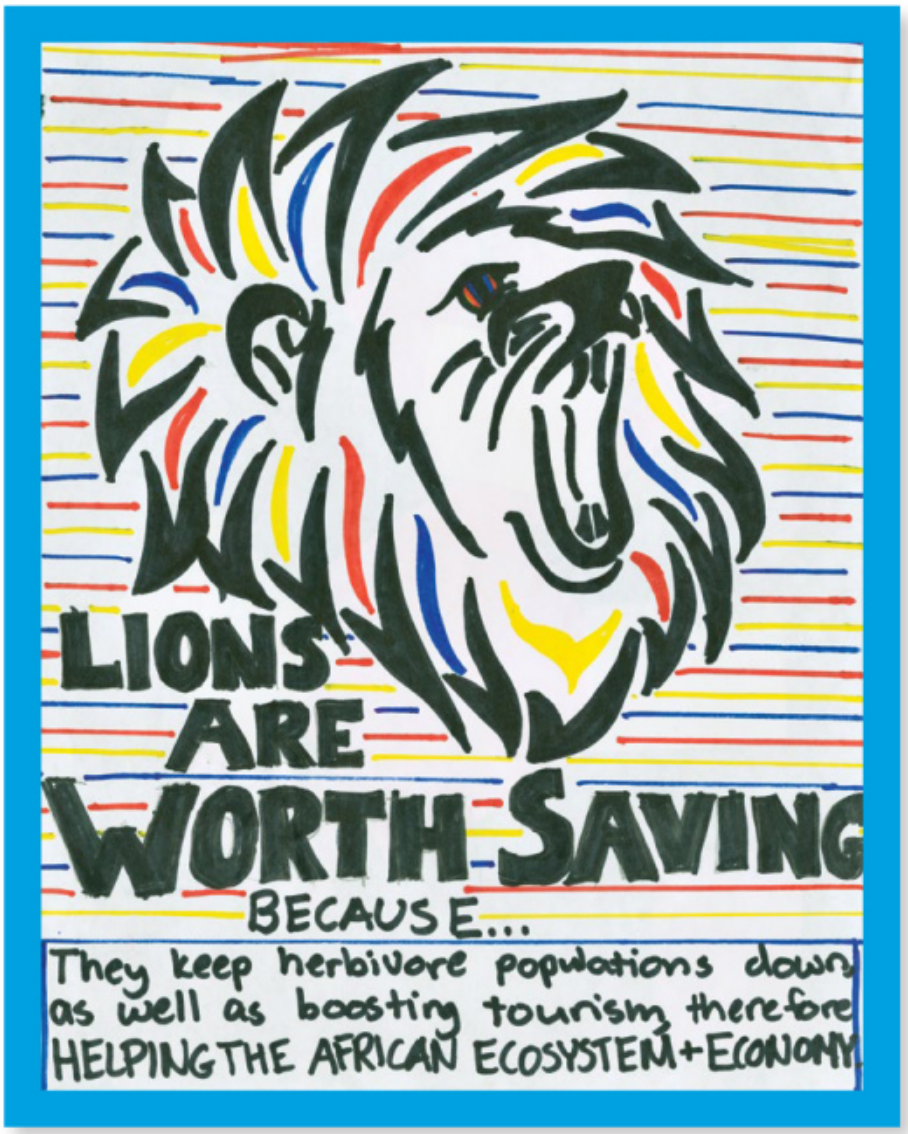
▼ **Shabad S.,** 11, Bowie, Maryland

Without lions the ecosystem will fall, with more prey eating more, causing loss of food and eventually wiping out all the animals in the food chain.

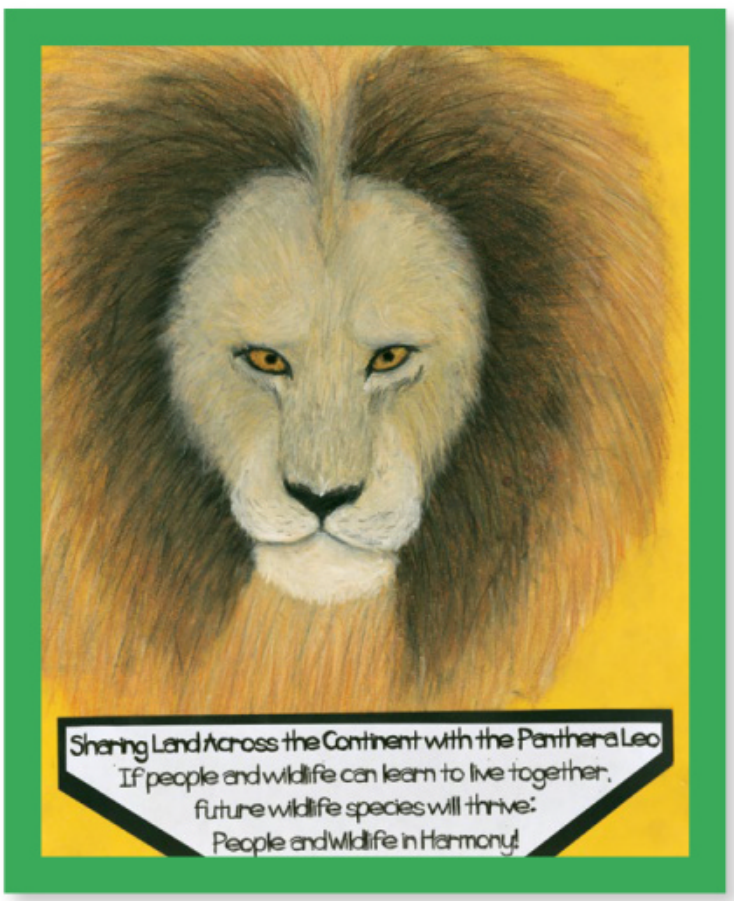
Draw a supercool scientist.

Send us your original drawings: ***Nat Geo Kids*—Scientist Art Zone P.O. Box 98002 Washington, DC 20090-8002**

Include your name, address, phone number, date of birth, a title for your drawing, a statement that it is your own work, and the name of your parent or guardian. Your parent or guardian must sign a release for publication if your illustration is selected. Submissions become the property of National Geographic Partners, and all rights thereto are transferred to National Geographic Partners. Submissions cannot be acknowledged or returned. Selection will be at the discretion of *Nat Geo Kids*.


LIONS ARE WORTH SAVING
BECAUSE...
They keep herbivore populations down as well as boosting tourism therefore HELPING THE AFRICAN ECOSYSTEM+ECONOMY

▲ **Mariam S.,** 11, Prairie Village, Kansas


Sharing Land Across the Continent with the Panthera Leo
If people and wildlife can learn to live together, future wildlife species will thrive:
People and Wildlife in Harmony!

▲ **Peiten S.,** 12, Streamwood, Illinois

▲ **Chas A.,** 11, Atlanta, Georgia

▼ **Frida L.,** 12, Corinth, Texas

Lions are the Most Social species of Big Cats!
SAVE THE LIONS
without lions there will be a global disaster!
Lions are the only cats that live in Groups!

Answers

"Up, Up, and Away"
(page 28):

"What in the World?"
(page 29): **Top row:** funnel cake, arcade game, swing carousel. **Middle row:** roller coaster, ice cream, prizes. **Bottom row:** bumper cars, cotton candy, Ferris wheel.

"Find the Hidden Animals"
(page 31): **1.** E, **2.** D, **3.** F, **4.** B, **5.** C, **6.** A.

"Explorer Academy"
(page 32): Cruz talks to whales.

Awesome Animals!

ERMINE

TEXT BY RUTH A. MUSGRAVE

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ERMINE

A **Ermines usually live to be at least 40 years old.**
FALSE. Females may live up to three years, and males have shorter lives.

B **A female ermine reaches maturity by the time she's three months old.**
TRUE. Female ermines mature quickly and are able to reproduce by the time they're two to three months old.

C **Ermine fur is so ugly that people have never bothered hunting them.**
FALSE. They've been hunted extensively for their luxurious white winter coats.

D **Hagrid offered Harry, Ron, and Hermione an ermine sandwich.**
TRUE. He called it by its other common name, stoat, in the Harry Potter series.

E **These delicate creatures prey only on smaller animals.**
False. They can overpower prey much larger than themselves. They also eat small rodents, birds, frogs, and insects.

IAN MATON / SHUTTERSTOCK

NATIONAL GEOGRAPHIC KIDS

Awesome Animals!

CHIMPANZEE

CHIMPANZEE

A **If your arms were as long as a chimp's, you could almost pull up your socks without bending.**
TRUE. A chimp's arm span is much wider than its height.

B **Chimps high-five each other.**
FALSE. But they do hug, kiss, and even hold hands.

C **Chimps have been known to stalk and kill baboons and other kinds of monkeys as food.**
TRUE. However, their diet consists mainly of fruits and nuts. Meat makes up only about 5 percent of what they eat.

D **An adult chimp can be taller and heavier than most 10-year-old kids.**
TRUE. Chimps can be over five feet tall and weigh more than 150 pounds.

E **Chimps make and use tools.**
TRUE. They chew leaves to make sponges, use rocks to crack nuts, and peel leaves off twigs to use to "fish" for termites.

SMELLME / DREAMSTIME

NATIONAL GEOGRAPHIC KIDS

NATIONAL GEOGRAPHIC KIDS

Awesome Animals!

ATLANTIC PUFFIN

ATLANTIC PUFFIN

A Some people used to think puffins were part fish and part bird.
TRUE. That's because these birds are excellent swimmers and divers that spend most of the year far out at sea.

B Watching puffins land, you might think, "What a klutz!"
FALSE. Though they spend most of their lives at sea, these birds are skilled at coming in for a landing on solid ground.

C Once a puffin catches a fish, it must eat it before catching another.
FALSE. A spine-covered tongue and roof of its mouth secure fish as the puffin continues hunting for more.

D A flying puffin's wings move so fast they're just a blur.
TRUE. The wings flap up to 400 times a minute (or almost seven times a second).

E Atlantic puffins are rare.
False. There are some 12 to 15 million of them.

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NATIONAL GEOGRAPHIC KiDS

Awesome Animals!

AARDWOLF

AARDWOLF

A **Got a thirsty aardwolf? Give it a big glass of juicy termites.**
TRUE. Aardwolves rarely drink because they get most of the water they need from the termites they eat.

B **An aardwolf uses its hefty claws to dig deep holes to locate termites.**
FALSE. Its claws aren't strong, so an aardwolf waits for termites leaving the mound.

C **An aardwolf could hear a termite whisper, "What big ears you have!"**
TRUE. Extra-large ears hear the rustling movements of marching termites.

D **An aardwolf's "bad hair day" technique intimidates predators.**
TRUE. When threatened, the aardwolf turns sideways, puffs out its hair, and roars and growls loudly.

E **An aardwolf is full after eating about 200 termites.**
FALSE. One aardwolf eats more than 200,000 termites in a night.

STOCKBYTE / GETTY IMAGES

NATIONAL GEOGRAPHIC KIDS

Awesome Animals!

INDIAN COBRA

INDIAN COBRA

A **"Oh, rats!" would be a dinner invitation to an Indian cobra.**
TRUE. Indian cobras eat rodents, frogs, and other small animals. Cobra venom paralyzes and kills the prey.

B **A newly hatched cobra is the same length as a regular hot dog.**
FALSE. It's as long as two hot dogs end to end. The 10-inch-long hatchling is venomous and able to spread its hood.

C **A cobra achieves its threatening pose by spreading its long ribs.**
TRUE. The resulting hood makes the cobra appear larger and fiercer. False eyespots add to the illusion.

D **King cobras will eat Indian cobras.**
TRUE. The mongoose is another predator.

E **"Bite first, ask questions later" is the cobra's motto.**
FALSE. Rather than bite, a cobra will first try to scare away an attacker by hissing and displaying its hood.

ISTOCKPHOTO / GETTY IMAGES

NATIONAL GEOGRAPHIC KIDS

Awesome Animals!

MARGAY

MARGAY

A **You're better at climbing trees than a margay is.**
FALSE. It can hang from a branch by one foot and is the only cat that can run headfirst down a trunk.

B **Big eyes help margays hunt.**
TRUE. These night stalkers hunt in the dark, usually between one and five in the morning.

C **Visiting tourists often see these sociable cats in their forest home.**
FALSE. The margay is rarely seen in its home, from Mexico to South America.

D **A newborn margay weighs about as much as this magazine.**
TRUE. Kittens weigh three to six ounces.

E **A margay's tail is shorter than tails on most wild cats, so it doesn't get in the way while the cat is climbing.**
False. The tail is almost as long as its body and is used for balance while climbing and leaping.

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